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**3 (Sem - 3 / CBCS) ZOO HC 3**

**2023**

**ZOOLOGY**

(Honours Core)

Paper : ZOO-HC-3036

**(Fundamentals of Biochemistry)**

Full Marks : 60

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

1. Answer the following questions :  $1 \times 7 = 7$
- (a) Which bond stabilize the secondary structure of protein ?
- (i) Covalent bond
  - ✓(ii) Hydrogen bond
  - (iii) Hydrophobic bond
  - (iv) van der Waals forces
- (b) Which of the following amino acid carries a net positive charge at the physiological pH ?
- (i) Valine
  - ✓(ii) Isoleucine ✓
  - (iii) Lysine
  - (iv) None of the above

Contd.

(c) The protein part of the enzyme is known as

- (i) Apoenzyme
- (ii) Holoenzyme
- (iii) Isoenzyme ✓
- (iv) Cofactor

(d) Which of the following statement is true about  $t_m$  ?

- (i) The higher the content of  $G \equiv Cbp$ , the lower the  $t_m$ .
- ✓ (ii) The higher the content of  $G \equiv Cbp$ , the higher the  $t_m$ .
- (iii) The higher the content of  $A = Tbp$ , the higher the  $t_m$ .
- (iv) It is termed as renaturation temperature.

(e) The disaccharide lactose is composed of

- (i) glucose and sucrose
- (ii) glucose and ribose
- ✓ (iii) glucose and fructose
- (iv) glucose and galactose ✓

(f) Which of the following is the example of derived lipids ?

- (i) Terpenes
- (ii) Steroids ✓

(iii) Carotenoids

(iv) All of the above

(g) Antibodies recognize antigens

- (i) by neutralizing pathogens within host cells
- ✓ (ii) by covalent binding to specific epitopes
- (iii) by their hypervariable regions
- (iv) All of the above

2. Answer the following questions :  $2 \times 4 = 8$

- (a) Write the difference between nucleosides and nucleotides.
- (b) Write the significance of  $k_m$
- (c) What is protein denaturation ?
- (d) What is reducing sugar ? Give one example.

3. Answer the following questions : (any three)  $5 \times 3 = 15$

- (a) What are glycoconjugates ? Write its biological significance.  $2+3=5$
- (b) Draw and briefly state the structure of immunoglobulin molecule.  $2+3=5$
- (c) What is cot curve ? State its significance.  $1+4=5$

(d) What is enzyme inhibition ? Write briefly about different types of enzyme inhibition.  $1+4=5$

(e) Write the difference between simple protein and conjugate protein.

4. (a) Derive Michaelis-Menten equation for single substrate enzyme catalyzed reaction.  $10$

**Or**

(b) Discuss the different classes of carbohydrate with example and mention its biological significance.

5. (a) What are terpenes ? Discuss the biological importance of different types of terpenes with suitable example.  $2+8=10$

**Or**

(b) Describe the classification of amino acid. Write the difference between essential and non-essential amino acid.  $7+3=10$

6. (a) What are the bonds involved in stabilizing the protein structure ? Discuss the various level of organization of protein.  $3+7=10$

**Or**

(b) Describe the various classes of immunoglobulin and state its function.  $10$